AMENDMENTS TO THE CLAIMS

1. (Previously presented) A method comprising:

obtaining a plurality of barcodes, at least one of the plurality of the barcodes comprising two or more different types of tags attached to an organic molecule backbone;

binding at least one of the plurality of barcodes to a target; and

detecting the at least one of the plurality of barcodes bound to the target,

wherein the organic molecule backbone comprises one or more branched nucleic acids and the at least one of the plurality of barcodes is detected by a technique selected from the group consisting of fluorescent spectroscopy, Raman spectroscopy, Fourier transform infrared spectroscopy (FTIR), and surface plasmon resonance,

wherein the number of barcodes in the plurality of barcodes exceed the number of different types of tags attached to the plurality of barcodes, and

wherein the barcodes are proximately located to a signal enhancing surface comprising a salt selected from the group consisting of LiF, NaF, KF, LiCl, NaCl, LiBr, NaBr, LiI, NaI, and KI, the location sufficiently proximal to enhance the signal 2-100 fold.

2. (Original) The method of claim 1, wherein the backbone comprises at least one molecule selected from the group consisting of a nucleic acid, a peptide, a polysaccharide, a bio-polymer and a synthetic polymer.

3. (Original) The method of claim 2, wherein the nucleic acid is single-stranded DNA.

4. (Withdrawn) The method of claim 2, wherein the backbone comprises a nucleic acid covalently linked to a peptide.

5. (Original) The method of claim 1, wherein the tag is selected from the group consisting of nucleic acids, nucleotides, nucleotide analogs, base analogs, fluorescent dyes, peptides, amino acids, modified amino acids, organic moieties, Raman tags, quantum dots, carbon nanotubes, fullerenes, submicrometer metal particles, electron dense particles and crystalline particles.

6. (Cancelled)

7. (Previously Presented) The method of claim 1, wherein the branches are located at predetermined sites along the backbone.

8. (Cancelled)

9. (Original) The method of claim 1, wherein the barcode binds to the target via a probe moiety.

10. (Original) The method of claim 1, wherein distinguishable barcodes are generated by attachment of the same tag to different sites along the same backbone.

11. (Original) The method of claim 1, wherein the target is selected from the group consisting of a protein, a peptide, a glycoprotein, a lipoprotein, a prion, a nucleic acid, a polynucleotide, an oligonucleotide, a lipid, a fatty acid, a carbohydrate, a glycolipid, a phospholipid, a sphingolipid, a lipopolysaccharide, a polysaccharide, a eukaryotic cell, a prokaryotic cell, a bacterium, a phage, a virus and a pathogen.

12. (Previously presented) A method comprising:

obtaining a plurality of nucleic acid templates, at least one of the nucleic acid templates comprising a backbone comprising a container section and a probe section; and

hybridizing two or more tagged oligonucleotides to the container section of the plurality of nucleic acid templates to create a plurality of barcodes,

wherein the backbone comprises one or more branched nucleic acids and the container section comprises two or more different types of tags, and

wherein the barcode is detected by a technique selected from the group consisting of fluorescent spectroscopy, Raman spectroscopy, Fourier transform infrared spectroscopy (FTIR), and surface plasmon resonance,

wherein the number of barcodes in the plurality of barcodes exceed the number of different types of tags attached to the plurality of barcodes, and

wherein the barcodes are proximately located to a signal enhancing surface comprising a salt selected from the group consisting of LiF, NaF, KF, LiCl, NaCl, LiBr, NaBr, LiI, NaI, and KI, the location sufficiently proximal to enhance the signal 2-100 fold..

13. (Original) The method of claim 12, further comprising binding the barcode to a target.

14. (Original) The method of claim 13, further comprising detecting the barcode bound to the target.

15-26. (Canceled)

27. (Withdrawn) A polymeric Raman label comprising:

two or more monomeric units covalently attached together;

two or more Raman tags; and

at least one probe.

28. (Withdrawn) The polymeric Raman label of claim 27, further comprising a nanoparticle or bead attached to the polymeric Raman label.

29. (Withdrawn) The polymeric Raman label of claim 27, wherein each Raman tag in the label is different.

30. (Withdrawn) The polymeric Raman label of claim 27, further comprising two or more copies of each Raman tag.

31. (Withdrawn) A system comprising:

an imaging instrument;

at least one barcode linked to a probe; and

at least one target bound to the probe.

32. (Withdrawn) The system of claim 31, wherein the imaging instrument is selected from the group consisting of a fluorescent instrument, a Raman instrument, and an FTIR instrument.

33. (Withdrawn) The system of claim 31, wherein each barcode comprises two or more Raman tags.

34. (Withdrawn) The system of claim 33, wherein each Raman tag in a single barcode has a different Raman emission spectrum.